

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of reusing an exhaust gas in a polymer production plant in order to reuse an inert gas within said exhaust gas discharged from a polymer production plant, which comprises a step of adsorbing and removing a polymerization solvent and polymerization monomers contained in ~~an~~ said inert gas by passing, through an adsorbent layer, ~~an~~ said exhaust gas containing said inert gas discharged from the polymer production plant, wherein ~~an~~ said inert gas reaching a predetermined purity by removing the polymerization solvent and polymerization monomers in the step of adsorption and removal is reused in the polymer production plant.

2. (Original) The method of reusing an exhaust gas in a polymer production plant according to claim 1, wherein the polymer in the polymer production plant is an olefinic polymer.

3. (Currently Amended) The method of reusing an exhaust gas in a polymer production plant according to claim 1 or 2, wherein:

(i) the adsorbent layer is composed of a single layer of at least one ~~kind of~~ adsorbent selected from the group consisting of silica gel and synthetic zeolite,

(ii) the absorbent layer is formed from plural layers, wherein each single layer of said plural layers is ~~each consisting of a~~

~~single layer~~ of the same or different kind of said at least one adsorbent, ~~described above,~~ or

(iii) the adsorbent layer is formed from ~~the~~ single or plural layers combined with an adsorbent layer ~~consisting~~ of an adsorbent other than silica gel ~~and~~ or synthetic zeolite.

4. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 1 to 3~~ claim 1 or 2, wherein the adsorbent layer is formed from:

- (1) a single layer of silica gel or synthetic zeolite,
- (2) plural layers having ~~the~~ a single layer of silica gel ~~combined with~~ and a single layer of zeolite, or
- (3) plural layers each ~~consisting of the~~ a single layer of silica gel.

5. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 1 to 4~~ claim 1 or 2, wherein the adsorbent layer comprises at least two adsorbent layers different in pore diameter laminated in the order of large to small pore diameters in the direction of flow of ~~an~~ the exhaust gas.

6. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 1 to 5~~

claim 1 or 2, wherein in the step of adsorption and removal, water is also removed.

7. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 1 to 6~~ claim 1 or 2, which comprises a step of desorbing and removing, from the adsorbent, a the polymerization solvent and polymerization monomers adsorbed onto the adsorbent in the adsorbent layer by depressurization.

8. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 1 to 7~~ claim 1 or 2, which comprises a step of desorbing and removing, from the adsorbent, a the polymerization solvent and polymerization monomers adsorbed onto the adsorbent in the adsorbent layer by depressurization while introducing a purge gas.

9. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 7 to 8~~ claim 7, wherein the purge gas is an inert gas reaching a predetermined purity by removing the polymerization solvent and polymerization monomers in the step of adsorption and removal.

10. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 1 to 9~~ claim 1 or 2, wherein the inert gas reaching a predetermined purity

by removing, with the adsorbent layer, the polymerization solvent and polymerization monomers contained in the inert gas is refluxed to the polymer production plant in order to use the inert gas in the polymer production plant.

11. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 1 to 10~~ claim 1 or 2, wherein the adsorbent layer is pressurized with an inert gas holder drum from a depressurized state in the desorption step to an operational pressurized state in the adsorption step.

12. (Currently amended) The method of reusing an exhaust gas in a polymer production plant according to ~~any one of claims 1 to 11~~ claim 1 or 2, wherein at least one kind of adsorbent used in the adsorbent layer is formed from ~~an~~ the adsorbent not pre-coated with hydrocarbons.